

REMARKS

Claims 1-8 are pending in this application, of which claims 1, 2, and 5 are being amended.

No new matter has been added.

The present invention is characterized in emphasizing a contrast between two elements (a sheathing portion of an electric wire and a mirror-like surface of a crimping piece (p. 11, line 3)) having different directional reflectivities by optimizing an arrangement of a light source and an image-taking means. Of course, such a sheath naturally has a diffuse reflection surface.

Claims 1, 5, and 6 are Not Obvious

Claims 1, 5, and 6 are rejected under 35 U.S.C. § 103 as being unpatentable over US Pat. 5,377,278 issued to Ichikawa (**Ichikawa '278**) in view of US Pat. 6,047,084 issued to Kent et al. (**Kent '084**). Applicant respectfully submits that claims 1, 5, and 6 are not obvious, and respectfully requests that the Examiner withdraw this rejection of claims 1, 5, and 6, for the following reasons.

Firstly, Applicant respectfully submits that claim 1, as amended, is allowable over the **Ichikawa '278** and **Kent '084**, because those references fail to teach or suggest "An inspection method of a terminal metal fitting having ... a sheathed electric wire and a crimping piece with a mirror reflection surface ... , comprising the steps of: illuminating the wire connecting portion fastened to the electric wire from a first specific direction; taking an image of the wire connecting

portion from a second specific direction; ... calculating whether an area is less than or not less than a threshold value in image information obtained by the binary processing; and judging good or bad of a fastening condition of the electric wire by the crimping piece on a basis of the area.”

In particular, regarding claim 1, **Ichikawa ‘278** and **Kent ‘084** fail to teach or suggest the sheathed electric wire, the crimping piece with a mirror reflection surface, the illuminating from a first specific direction, the taking of an image from a second specific direction, the calculating of the area less than or not less than a threshold value, and the judging of good or bad of a fastening condition on a basis of the area.

Secondly, Applicant respectfully submits that claim 5, as amended, is allowable over the **Ichikawa ‘278** and **Kent ‘084**, because those references fail to teach or suggest “An inspection system ... , comprising: a judging means to binary-process an image of the wire connecting portion illuminated by the light source and judge good or bad of a fastening condition of the electric wire by the crimping piece on a basis of an area being less than or not less than a threshold value in image information obtained by the binary processing, wherein the image-taking means and the light source are arranged so that the light thrown from the light source and reflected by the crimping piece with a mirror reflection surface enters the image-taking means.”

Also, Applicant notes that, in claim 5, the light source and the image-taking means are so arranged to transmit light from the crimping piece into the image-taking means, so that the crimping

piece brighter than the electric wire is.

**Ichikawa '278** uses a captured image to determine whether a solderless terminal has been crimped against an electrical conductor, and relies on luminance change points A through H to inspect the terminal (FIG. 4). **Ichikawa '278** does not indicate that it utilizes the above-described features of claims 1 and 5, as amended.

On the contrary, **Ichikawa '278** utilizes a histogram to determine whether a crimp is satisfactory. The use of the histogram, and the other features of this reference, fail to teach or suggest the combination of features of claims 1 and 5 discussed above such as the claimed "area" and crimping piece with mirror reflection surface.

**Kent '084** uses a captured image to determine the accuracy of a placement of parts relating to a pad 202, part 900, lead 902, and paste 200 (col. 13, lines 30-32, FIG. 9), and uses polygon shapes of the pad 202 and of other elements. The key features of **Kent '084**, in the determination of the accuracy of a circuit assembly, include the polygon shapes of the pad 202 and of other elements (col. 13, lines 32-37, FIG. 9). **Kent '084** does not indicate that it utilizes the above-described features of claims 1 and 5, as amended.

On the contrary, **Kent '084** utilizes polygon shapes to determine whether a status is satisfactory. The use of the polygons, and the other features of this reference, fail to teach or suggest

the combination of features of claims 1 and 5 discussed above such as the claimed “area” and crimping piece with mirror reflection surface.

Claim 6 depends from claim 5. Therefore, in view of the foregoing, Applicant respectfully requests that the Examiner withdraw the rejection of claims 1, 5, and 6.

Claims 2-4 are Not Obvious

Claims 2-4 are rejected under 35 U.S.C. § 103 as being unpatentable over **Ichikawa ‘278** in view of **Kent ‘084** and US Pat. 5,899,959 issued to Shields et al. (**Shields ‘959**). Applicant respectfully requests that the Examiner withdraw this rejection of claims 2-4 for the following reasons.

Applicant respectfully submits that claim 2, as amended, is allowable over the **Ichikawa ‘278**, **Kent ‘084**, and **Shields ‘959** because *those references fail to teach or suggest* an inspection system ... comprising: a judging means to judge whether good or bad as to a fastening condition on a basis of an area being less than or not less than a threshold value, wherein the light thrown from the light source and reflected by the crimping piece with a mirror reflection surface does not enter the image-taking means, and a sheathing portion of the electric wire is a light color.

Also, Applicant notes that, in claim 2, the light source and the image-taking means are so arranged in order to not transmit light from the crimping piece directly into the image-taking means,

so that the crimping piece is darker than the electric wire is.

**Ichikawa '278** and **Kent '084** are discussed in detail above, and are shown above to be deficient regarding claimed "area" and crimping piece with mirror reflection surface.

**Shields '959** is merely relied on by the Examiner with respect to camera 24 located inside box 64 (col. 7, lines 5-11, FIG. 2, abstract). **Shields '959** fails to remedy the above-described deficiencies of **Ichikawa '278** and **Kent '084**., because **Shields '959** does not teach or suggest the above-listed features as set forth in Applicant's claim 2, as amended.

Claims 3 and 4 depend from claim 2. Therefore, in view of the foregoing, Applicant respectfully requests that the Examiner withdraw the rejection of claims 2-4.

Claims 7 and 8 are Not Obvious

Claims 7 and 8 are rejected under 35 U.S.C. § 103 as being unpatentable over **Ichikawa '278** in view of **Kent '084**, **Shields '959**, and US Pat. 5,774,574 issued to Hoki (**Hoki '574**). Applicant respectfully requests that the Examiner withdraw this rejection of claims 7 and 8 for the following reasons.

Claims 7 and 8 depend from claims 2 and 5. Regarding claim 2, Applicant has demonstrated above that **Ichikawa '278**, **Kent '084**, and **Shields '959** fail to teach or suggest base claim 2, as

amended. Regarding claim 5, Applicant has demonstrated above that **Ichikawa '278** and **Kent '084** fail to teach or suggest base claim 5, as amended.

**Hoki '574** compares a binary image with a standard image to detect defects in a printed substrate (col. 5, lines 28-32, abstract).

Regarding claim 2, as amended, Applicant respectfully believes that **Hoki '574** fails to remedy the above-described deficiencies of **Ichikawa '278**, **Kent '084**, and **Shields '959**, because **Hoki '574** does not teach or suggest Applicant's claimed combination of: a sheathing portion of an electric wire is a light color; a crimping piece with a mirror reflection surface; an area less than or not less than a threshold value; and the judging of a fastening condition on a basis of the area, as set forth in claim 2, as amended.

Regarding claim 5, as amended, Applicant respectfully believes that **Shields '959** and **Hoki '574** fail to remedy the above-described deficiencies of **Ichikawa '278** and **Kent '084**, because **Shields '959** and **Hoki '574** do not teach or suggest Applicant's claimed combination of: a crimping piece with a mirror reflection surface; an area less than or not less than a threshold value; and the judging of a fastening condition on a basis of the area, as set forth in claim 5, as amended.

Therefore, in view of the foregoing, Applicant respectfully requests that the Examiner withdraw the rejection of claims 7 and 8.

Claims 1-8 are Not Obvious

In view of the foregoing amendments and remarks, it is respectfully believed that essential elements of a *prima facie* case of obviousness are missing. Firstly there is no suggestion or motivation either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to combine the reference teachings to arrive at Applicant's claimed invention, as set forth in claims 1-8, as amended. Secondly, the references do not teach or suggest all the claim limitations of claims 1-8, as amended.

Accordingly, Applicant respectfully submits that the Examiner will not be able to establish a *prima facie* case regarding claims 1-8, as amended, in view of the cited art. Therefore, Applicant respectfully believes that the rejection of claims 1-8 should be withdrawn.

Accordingly, in view of the foregoing, all pending claims are respectfully believed to be in condition for allowance, which action, at an early date, is respectfully requested.

If the Examiner feels that this application is not currently in condition for allowance, the Examiner is requested to contact Applicant's undersigned attorney at the telephone number indicated below to arrange for a telephone conference to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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